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ABSTRACT

This article investigates a specific foreign language (FL) learning problem, the substitution of /s,z/ for English unvoiced and voiced "th" by native speakers of Egyptian Arabic, and concludes that the facts are better explained in terms of language transfer than by an explanation in terms of inherent difficulty independent of native language. A careful contrastive analysis can make quite precise predictions about the substitution that is made, the learners who make such substitutions and the circumstances under which the substitution is most common. However, it is argued that for the present case a contrastive analysis of the conventional kind, comparing native and target language as static systems, is useless. What is required is a sociolinguistic analysis of the native language, as it is a pattern of sociolinguistic variation which is being transferred to English. (Author)

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SOCIOLINGUISTIC VARIATION AND LANGUAGE TRANSFER IN PHONOLOGY

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ABSTRACT

This article investigates a specific foreign language (FL) learning problem, the substitution of /s,z/for English /θ,ð/ by native speakers of Egyptian Arabic, and concludes that the facts are better explained in terms of language transfer than by an explanation in terms of inherent difficulty independent of native language. A careful contrastive analysis can make quite precise predictions about the substitution that is made, the learners who make such substitutions and the circumstances under which the substitution is most common. However, it is argued that for the present case a contrastive analysis of the conventional kind, comparing native and target language as static systems, is useless. What is required is a sociolinguistic analysis of the native language, as it is a pattern of sociolinguistic variation which is being transferred to English.

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Sociolinguistic Variation and Language Transfer in Phonology

Richard W. Schmidt

Introduction

Exaggerated claims for the predictive power of contrastive analysis are no longer fashionable. On the contrary, virtually all researchers in the field would agree that not all second language errors have their source in the learner's native language, and many would agree that "a majority of students' deviations or 'errors' are attributable to intralanguage interference rather than to mother tongue interference" (Scott and Tucker, 1974.70).

Recent studies of second language acquisition have tended to imply that contrastive analysis may be most predictive at the level of phonology, yet even in this area considerable skepticism remains. This may be due at least partly to the failure of contrastive analyses to provide reliable or complete predictions:

> For although a differential description of English and French for example, may indeed point out the fact that a French learner of English may have difficulty pronouncing the interdental sounds of thin and then because of their absence from the French phoneme inventory, it cannot predict as well as can the experienced teacher which way a given learner or group of learners will handle the difficulty. In point of fact, different learners with the same native language do make different mistakes; the above interdental sounds, for example, are rendered sometimes as /s,z/, sometimes as /t,d/. But this information is supplied, not by an a priori comparison of English and French, but by the observations of language teachers.
>
> (Mackey, 1966.8-9)

It is also true, as Tarone (1976) points out, that while many papers have been written claiming to predict performance on the basis of contrastive analysis, few of these have presented systematically gathered and analyzed data to validate the predictions made. Tarone calls for a systematically gathered data base against which various theories of interlanguage phonology could be tested, including the relative importance of language transfer from the native language, the reactivation of first language

acquisition processes (the extent to which the second-language learner behaves like the first-language learner), and -- possibly -- other processes traceable neither to language transfer nor to the re-activation of first-language processes and strategies (Tarone, 1976.91).

The purposes of this paper are, first, to demonstrate that a careful contrastive analysis can indeed predict some facts about interlanguage phonology in a rather precise manner and, second, to argue that at least for certain types of foreign language (FL) learning problems a more sophisticated type of contrastive analysis than that generally used or assumed must be developed. The FL learning problem to be examined here is the substitution of /s,z/ for English /θ,ð/ by native speakers of Egyptian Arabic. The refinement required in the contrastive analysis is the recognition that neither the target language (English) nor the native language (Arabic) can usefully be described as a self-contained, homogeneous and static system, used by idealized speaker-hearers in a homogeneous speech community. In the case of Arabic, it may not even be very useful to talk about two such self-contained systems, i.e. colloquial and classical Arabic, in terms of the diglossia model (Ferguson, 1959).

Background of the Present Study

The FL learning problem. Teachers of English to native speakers of Egyptian Arabic are well aware of the fact that the majority of their students will have difficulties with English /θ/ and /ð/ and will often substitute /s/ and /z/, respectively. This fact has been noted by innumerable observers and generally has been accounted for in contrastive analyses of English and Egyptian Arabic by the observation that the English interdental fricatives have no counterparts in colloquial Cairo Arabic. The problem is therefore seen as a basic phonemic error of the type in which the target language has a phoneme unmatched in the phonemic inventory of the native language (Todaro, 1970).

The problem with the explanation provided by this type of contrastive analysis is that classical Arabic does have the interdental fricatives /θ/ and /ð/ (as well as a third, emphatic interdental /ð̲/). It ought to be the case, therefore, that students who are literate in Arabic and who have been exposed to Classical Arabic will have little or no difficulty with these English fricatives. But as Todaro and others have pointed out, this is simply not the case (Todaro, 1970.32). Lehn and Slager observe that even if the student has been exposed to the /θ,ð/ sounds of classical Arabic, in English "he has usually substituted /s,z/ while labouring under the illusion that he was saying something else" (Lehn and Slager, 1959.28).

In other words, given two types of learners, illiterate and literate, one must claim that both groups exhibit phonological transfer from colloquial Arabic only. This is a totally ad hoc explanation, unfortunately, since there may be other mistakes made by literate learners for which interference must be claimed to originate in the classical rather than the colloquial variety of the native language (Kaplan, 1967; Richards, 1973.124-7). These facts are an embarrassment to a theory of contrastive analysis which claims to predict learners' errors. A comparison of classical and colloquial Arabic and English also fails to explain the fact that while colloquial Egyptian Arabic has both sibilant and stop reflexes for the etymological (classical) interdentals only sibilant substitutions have been reported in the English of these speakers.

One is tempted to look for other explanations. Since the English interdental fricatives cause problems for learners who speak many different native languages (French, Russian, Japanese, Spanish, etc.), an explanation in terms of inherent difficulty, independent of the learner's native language, is attractive. In discussing the phonology of Erica, a two-year-old native speaker of American English, Moskowitz (1970) has suggested that production problems with the interdentals and other fricatives are primarily due to lack of sufficient motor control -- an inability to maintain the articulators in as finely adjusted position as is required. Menyuk (1968), following many other observers, reports that /θ,ð/ are the sounds mastered last and substituted most frequently by English native speakers and further reports that it is the distinctive features ± continuant (the feature which differentiates /θ,ð/ from /t,d/) and ± strident (differentiating /θ,ð/ from /s,z/)which are the features last mastered by native speakers of English.

However, in the present case, it is this writer's opinion that an explanation based on general developmental processes is less satisfactory than an explanation based on direct interference from the native language. The identification of the source of Egyptian students' difficulties with English th-words is suggested by Harrell's observation that "for the Egyptian, /θ/ and /ð/ are merely super-careful stylistic variants of /s/ and /z/ in certain words" (Harrell, 1960.69). This brief statement requires explanation. The remainder of this paper will deal with the historical origins of the relevant fricative-stop-sibilant alternations in Egyptian Arabic, the ways in which these segments function synchronically as sociolinguistic variables, and the degree of similarity between student performance in Arabic and in English with respect to these variables.

Historical background. Two diachronic changes have affected the classical Arabic fricatives /θ, ð, ðˤ/ in the development of the Egyptian dialect. An early historical rule merged these three segments with the stop series /t,d,d̲/:

	Classical Arabic	Egyptian colloquial Arabic
'thick'	θaxi:n	tixi:n
'more'	ʔakθar	ʔaktar
'wolf'	ðiʔb	di:b
'back'	ðˤahr	d̲ahr

At some point in time, this sound change ceased to operate. Words which were then borrowed (or re-borrowed) from the classical into the colloquial lexicon instead underwent a new sound change, merging the interdentals /θ,ð/ with the sibilants /s,z/ and creating a new emphatic sibilant /z̲/ as the reflex of /ðˤ/:

	Classical Arabic	Egyptian colloquial Arabic
'to act'	maθθal	massil
'to mention'	ðakar	zakar
'great'	ʕaðˤi:m	ʕaz̲i:m

Although it is not possible to date either of these rules precisely, there is no doubt about their relative chronology. Birkeland (1952) points out that the change from interdental fricatives to stops is common to Lower and Upper Egypt and so must be presumed to have taken place as soon as a distinctive Egyptian Arabic dialect was being formed. The beginning date of the interdental fricative to sibilant change cannot be pinpointed with any precision, but Birkeland gives some evidence ordering the change between the two rules known to have operated after the 14th century.

For contemporary colloquial Egyptian Arabic, Robertson (1970.147) has observed that "there seems to be no rule as yet for determining which sound will prevail in a given word". This is true in the sense that there are no phonological or other linguistic conditioning factors involved: both the first and the second diachronic changes were unconditioned. What is equally true, however, and important for the present discussion, is that the change from interdental fricatives to stops is no longer operating in Egypt. Words that have not been in the colloquial vocabulary for a long time -- including newly coined technical terminology, some older words that are generally acquired by native speakers only through formal education or formal channels, retaining their character as learned words, and foreign borrowings -- cannot now be colloquialized with stops. Since this rule is no longer productive, there is no reason to predict any transfer effect from it to a foreign language. The change of fricatives to sibilants remains a productive rule in Egypt, on the other hand, and any classical Arabic word with /θ, ð, ðˤ/ may be colloquialized

with /s,z,ẓ/; e.g. /mumaθθil/ ~ /mumassil/, 'actor', but not */mumattil/; /θawra/ ~ /sawra/, 'revolution', but not */tawra/.

Synchronic sociolinguistic variation. As a result of the two historical sound changes discussed above, there are in contemporary Egyptian Arabic numerous lexical triplets with interdental fricative, sibilant and stop variants, e.g., /θa:liθ/ ~ /sa:lis/ ~ /ta:lit/, 'third'. Both linguists and native speakers tend to identify such variants with different linguistic systems (i.e., classical and colloquial) and to assign the alternations to code switching, code mixing or free variation. The important fact to note, however, is that such switching and mixing is orderly rather than random, and the variation is not really free. These alternations constitute, in Labov's terms, a sociolinguistic variable -- "one which is correlated with some non-linguistic variable of the social context: of the speaker, the addressee, the audience, the setting, etc." (Labov, 1970.192).

The present writer has investigated the stylistic use of interdental fricative, sibilant and stop pronunciations in lexical items with potential interdentals (hereafter referred to as the Arabic TH-variable) among 16 university students and 12 working class males with secondary education or less in Cairo (Schmidt, 1974). In each of four discriminable styles -- relatively informal interview speech, formal interview style, reading passages and word lists -- a distinctive distribution pattern appeared.

As Table 1 shows, different pronunciations of the Arabic TH-variable predominated in different styles. Interdental fricatives accounted for slightly more than half of all realizations of the TH-variable when reading from word lists, but in no other style. Sibilants predominated when reading from texts. Stops did not occur at all in the reading styles, but prevailed in the relatively casual parts of the oral interview. Stop and sibilant pronunciations were about equal in the more formal parts of the interview.

Table 1: Pronunciation of the Arabic TH-variable in Various Styles -- All Informants (Schmidt, 1974.95)

	Informal interview speech	Formal interview speech	Reading passage	Reading word lists
Interdental fricatives	--	4%	39%	56%
Sibilants	22%	45%	61%	44%
Stops	78%	51%	--	--

The same general pattern -- an increase in sibilant pronunciation in the middle of the stylistic continuum and increases in fricative and stop pronunciations at the formal and informal ends, respectively-- held for both informant groups. There was, however, a striking difference between the two socio-economic groups studied. While all of the university students produced at least some instances of interdental pronunciations, seven of the twleve working class informants produced no interdentals at all. Those working class informants who did produce some instances of the classical interdentals did so less than half as frequently as the mean for the university group. The Arabic TH-variable thus appears to be a highly developed sociolinguistic marker, an indicator which co-varies along at least the two dimensions of style and socio-economic class.

Something should be said here about the subjective reactions of native speakers to the varying pronunciations of words containing the TH-variable. Stop pronunciations of words with etymological interdentals are universally identified by native speakers as colloquial and therefore "incorrect" when used in any context which normatively calls for the use of classical Arabic. The status of sibilant variants is much more complex and whether or not /s,z,ẓ/ are considered "correct" pronunciation of Arabic ظ , ذ , ث depends on both the critic and a finer definition of the speech situation (cf. Kaye, 1970). If a student reciting from the Koran reads using sibilant pronunciations, he will be forcefully corrected by his Arabic teacher. However, a television newscaster who alternates between interdental and sibilant pronunciations will occasion no comment. His variable behavior in that context (still formal and still normatively requiring "classical" Arabic) will be neither censured nor even noticed.

Variability and Language Transfer

Hypotheses. In the light of the foregoing discussion, two hypotheses are suggested regarding the pronunciation of th-words in English by native speakers of Egyptian Arabic:

(1) Native speakers of Egyptian Arabic learning English as a FL will alternate interdental and sibilant (but not stop) pronunciation of th-words along the dimension of style (formal-informal), in English as in Arabic.

(2) Within a given style level, the frequency with which a given speaker substitutes sibilants in English th-words will reflect his performance in Arabic at an equivalent style level.

Subjects and procedure. Subjects for the present experiment consisted of 34 native speakers of Arabic, all male, all students of English at the time the study was carried out. Twenty-two of the subjects were first- and second-year students in Egyptian public (government) secondary schools. Their ages ranged between 15-17 years. In each of the four schools from which these students were drawn, Arabic is the primary language of instruction and English is the major foreign language taught. Since English instruction is begun at the preparatory (junior high) level in Egypt, each of these S's had already completed three or four years of study of English at the time of the study. The remaining twelve S's were adult learners (24-40 years) enrolled in beginning and lower intermediate level English classes at the Division of Public Service of the American University in Cairo. These S's comprised a socially and educationally more heterogeneous group than the secondary students, but were judged by teachers familiar with both groups to be roughly equivalent to the secondary students in terms of overall English proficiency.

Each S was interviewed separately, on school grounds, by his regular English teacher and was asked to read aloud the following:

a) a reading passage of about 150 words in Arabic
b) a reading passage of approximately the same length in English
c) a list of 20 Arabic words all containing either /θ/ or /ð/
d) a list of 10 minimal pairs in Arabic contrasting /θ/:/s/ and /ð/:/z/
e) a list of 20 English words all containing either /θ/ or /ð/
f) a list of 10 English minimal pairs for /θ/:/s/ and /ð/:/z/

The reading passages in both English and Arabic were chosen on the basis of appropriateness of level for the student subjects. Natural texts were altered slightly (a) to increase the occurrences of /θ/ and /ð/ and (b) to reduce excessive repetition of a few specific lexical items with these fricatives in English (e.g. the, there) and Arabic (e.g. /ha:ðа/, 'this'). The Arabic reading passage had a total of ten potential occurrences of /θ/ (10 types, 10 tokens), and thirteen potential occurrences of /ð/ (10 types, 13 tokens). The English passage had a total of twelve potential occurrences of /θ/ (11 types, 12 tokens) and eighteen potential occurrences of /ð/ (11 types, 18 tokens). As far as possible the test materials were constructed using words that the teachers judged to be familiar to the students.

S's were told that their teachers wanted to compare their reading levels in Arabic and English. They were of course not told about the particular phonological contrast of interest, but since the presentation of the first minimal pair list was assumed (and intended) to make the students aware of this specific interest, no word lists were presented to the subjects until both reading passages were completed. Within the two major groups of tasks, reading passages and word lists (including minimal pairs), the order of presentation (Arabic-English or English-Arabic) was randomly varied.

All S's were tape-recorded while reading. From these tapes, scores were computed initially for the number of instances of /θ/ and /ð/ separately in each of the three parts of the test for each of the two languages. Subsequent analysis showed no significant differences on the voiced-voiceless dimension, so only figures for /θ/ and /ð/ summed are presented in the following section. Realizations of classical Arabic /ð̲/ were not observed in this study. The frequency of this phoneme in Arabic is low, and since there is no English counterpart of this Arabic segment there is no place in English where one could look to find interference from the Arabic alternations.

Since the number of occurrences of the TH-variable in the English reading passage was greater than the number of such occurrences in the Arabic reading passage, percentage scores were used for this analysis. For the word lists and minimal pairs lists only raw scores were used.

(Salah Abdel Khalek Gawad, Abdel Mottaleb Abdel Aaty, Abbas Mohamed Shalaby, and Mona Zaklama Fahmy, students in TEFL 503 (Psychological factors in language learning) at the American University in Cairo, assisted in the design, administration and scoring of the experimental materials used in this study.)

Results and Discussion. In the English test battery, four S's pronounced all th-words correctly, using /θ,ð/ in every case. One of these S's used /θ,ð/ consistently in the Arabic part of the test as well. One S produced only sibilant pronunciations in both languages. All other S's alternated between /θ,ð/ and /s,z/ in both English and Arabic. As expected, there were no occurrences of /t,d/ pronunciations in either language, with the single exception of one S who read /talati:n/ ('thirty') rather than the expected /θalaθi:n or /salasi:n/ in the Arabic reading passage.

The hypothesis that S's would vary their pronunciations of th-words stylistically in the two languages was confirmed, although the patterns found were not identical. As can be seen from Table 2, S's increased the frequency of th-pronunciations in both languages when moving from the most informal style used here, the reading passage, to the two more formal styles of word lists and minimal pairs.

Table 2: Realizations of the TH-variable in English and Arabic - All Subjects

		Reading Passage	Word List	Minimal Pairs
% of interdental pronunciations	Arabic	33%	64%	77%
	English	54%	73%	73%

In Arabic, S's increased the frequency of interdental pronunciations gradually in successively more formal reading styles. For Arabic, the differences when moving from the reading passage to the word list and when moving from the word list to the list of minimal pairs are both statistically significant (by t-test, significant at the 1% level of confidence). However, it is apparent from the table that the English test did not elicit completely parallel behavior. The increase from reading passage to word list is less in English than in Arabic (though still significant at the 1% level), and there was no increase at all when moving from reading word lists to reading minimal pairs in English.

At least two facts need to be explained here: the higher base point (reading passage) for English than for Arabic, and the absence of measurable differences in performance in word lists as opposed to minimal pairs. In the first case, there are at least two possibilities. The English reading passage might not have been sufficiently equivalent to the Arabic passage to get comparable results, or some or all of the S's may actually perform less variably in English than in Arabic, though still not in control of a categorical interdental-sibilant contrast. The latter seems the more plausible explanation and is discussed further at the end of this section.

The lack of increase in th-pronunciations when reading minimal pairs, on the other hand, may well be the result of the instrument used. As noted above, the English test was constructed attempting to use only words familiar to the students. For the reading passage and word list this was possible, but familiarity could not be ensured for the minimal pairs list. Minimal pairs such as then:Zen, the latter almost certainly unfamiliar to S's, were eliminated from consideration, but some items included, such as

seething:seizing or breeze:breathe (the latter pronounced by several S's as /breθ/ an incorrect pronunciation scored as correct in this case, since only the interdental-sibilant alternation was at issue) proved also to be unfamiliar. It is suspected that the effectiveness of minimal pairs testing as a device to draw attention strongly to the contrasts being tested was neutralized in this case by the attention focused by S's on the meanings of unfamiliar lexical items.

The hypothesis that, within a given style level, the frequency with which a given S would substitute sibilants for interdentals in English th-words would reflect his alternations in Arabic was strongly supported. As can be seen from Table 3, performance scores for English th-words correlated highly with scores on the Arabic TH-variable for both subject groups at each style level measured.

While the correlations reported in Table 3 permit rejection at a high level of confidence of the null hypothesis that pronunciation of English th-words is not related to performance on the Arabic TH-variable, such correlations do not, strictly speaking, prove a causal relationship, i.e. language transfer from Arabic to English. The theoretical possibility that English performance has caused the Arabic performance is in the present case highly implausible. The third possible interpretation, that some unmeasured variable lies behind both the Arabic and the English interdental-sibilant alternations, is not implausible, however, since as reported earlier performance on the Arabic TH-variable was shown in a previous study to be a function of socio-economic class and education.

Table 3: Pearson Product-Moment Correlations for English and Arabic TH-variable in Various Styles

r (correlation coefficient) for:	12 Adults	22 Secondary Students	Total All S's
Reading passages	.6977*	.7913**	.7348**
Word lists	.6863*	.6968**	.6897**
Minimal pairs	.7225**	.6952**	.7015**
Total battery	.7687**	.8436**	.8499**

* $p < .01$
** $p < .005$
(one-tailed)

The present experiment was not designed to include detailed information on the socio-economic status of S's. However, several ex post facto analyses have been performed on the data to discover possible differences among subject groups.

It was suspected that there might well be measurable differences between the secondary students and the adult learners used as S's. These two subject groups differ in several ways, including age, educational experience, exposure to different teaching methods, materials and teacher-models. However, t-tests carried out on the means of these two groups at each style level revealed no significant differences in either English or Arabic.

A closer examination of the secondary students, on the other hand, indicated that these S's could be broken into two groups which exhibited quite different behavior. Of the 22 secondary S's, six were drawn from a terminal secondary school program which trains elementary school teachers for public schools. By reputation at least, such teacher training schools **enroll students of lower socio-economic background and offer poorer quality instruction** than do the full-curriculum college preparatory secondary schools. The remaining 16 secondary S's were students in regular, non-terminal secondary schools and are at least potentially future university students.

As shown in Table 4, there were striking differences between these two groups of secondary students. In all six test contexts, the means for the non-terminal secondary S's are higher than those of the terminal secondary S's. In spite of the fact that the number of S's in the terminal group is very small, differences in the means for the reading passage and word lists in both languages were significant at the 5% level of confidence or better.

Something might be said also about the performance of these two groups with regard to the minimal pairs list, particularly in English. It was speculated above that the identical means for all S's (secondary and adult combined) for the English minimal pairs list might have been due to the inclusion of unfamiliar words which distracted S's from the phonological contrasts at issue. From Table 4, we see that the two secondary groups behaved quite differently in this regard; the terminal secondary S's did tend to increase the frequencies of interdental pronunciations of English th-words when reading minimal pairs, while the non-terminal students tended to decrease interdental pronunciation. This suggests the further speculation (no more than that) that the university preparatory students were more distracted by and concerned about the meanings of unfamiliar words, while the terminal students were able to concentrate on simply reading aloud in as acceptable a manner as possible, with little regard for meaning.

Table 4: Mean Scores for the TH-variable in English and Arabic for Two Groups of Secondary Students.

		6 S's Terminal secondary	16 S's Non-terminal secondary	t-value
Arabic	Reading passage	8.66	45.63	2.369*
	Word list	43.33	70.62	1.747*
	Minimal pairs	68.33	78.75	.704
English	Reading passage	19.66	60.25	3.243**
	Word list	40.00	86.25	5.087**
	Minimal pairs	53.33	79.38	1.615

df=20
*p < .05
**p < .01
(one-tailed)

One final aspect of the data collected in the present experiment might be discussed, not because firm conclusions can be drawn but because of the importance of questions which need to be answered by future research. One needs to ask how it is that the kind of phonological interference from native language to FL demonstrated here for relatively low proficiency FL learners persists for some very advanced second language speakers, while other such learners quite successfully develop disjunctive phonologies for the two languages. The data here may offer no answers in terms of the strategies that such successful learners use, but do provide evidence that some of the S's in this experiment are moving in that direction. A comparison of individual subject scores for the total English battery versus the total Arabic battery reveals no S whose total score (interdental realizations of the TH-variable) in Arabic exceeds his English scores by as much as ten percentage points. On the other hand, six of the twelve adult S's and six of the 16 non-terminal secondary S's (but none of the terminal secondary S's) did have total English th-scores exceeding their Arabic scores by ten or more percentage points. While continuing to exhibit th-variability in both languages and continuing to express this variability along the dimension

of style, these S's are apparently moving towards a categorical system for English. Two S's, both non-terminal secondary students, appear to have almost achieved the goal of disjunctive phonologies for the two languages: the total English interdental scores for those students were 90% and 88%; their total Arabic th-scores were 51% and 19%, respectively.

Conclusions

The study reported here has investigated a very limited area of interlanguage phonology in order to support the claim that a careful, sociolinguistically oriented, contrastive analysis can predict some FL errors, i.e. that a better case can be made for language transfer than for explanations independent of native language. The data support the following conclusions with regard to the specific phonological variable investigated:

1. The common observation that native speakers of Egyptian Arabic frequently substitute sibilants in English th-words, regardless of whether or not they have been exposed to classical Arabic, was confirmed. The explanation offered is that the traditional dichotomy between classical and colloquial Arabic is misleading in this respect, and alternation among interdental and sibilant pronunciations of Arabic th-words is normal and acceptable in most speech contexts which normatively require "classical" Arabic.

2. The observation that Egyptians do not substitute stops in English th-words was also confirmed. The explanation offered here is that while colloquial stops do often alternate with classical interdentals, this is the result of an historical sound change which is no longer productive.

3. The hypothesis that S's would alternate interdental and sibilant pronunciations of the TH-variable stylistically in the two languages was confirmed. However, an English minimal pairs list did not elicit the expected increase in standard interdental pronunciations. It was suggested that this unexpected result might have been due to the inclusion of unfamiliar words in the English minimal pairs list, which may have distracted some (but not all) S's from the phonological contrast at issue.

4. The hypothesis that, within styles and across the stylistic spectrum, S's substitutions of sibilants for interdentals in English would correlate highly with their performance in Arabic was supported.

5. Previous research showing that performance on the Arabic ʔl-variable is an indicator of social class and educational background was at least partially supported by the differences in performance in the two languages by terminal and non-terminal secondary students.

Besides predicting the occurrence and distribution of second language errors in pronunciation in a more precise manner than conventional analyses contrasting native and target languages as static systems, the present investigation may have something to say about the relative persistence of phonological interference in even advanced second language learners. The patterning of the Arabic ʔl-variable has a number of properties which allow it to be classified as a "stable sociolinguistic variable" (Labov, 1970). Labov has suggested that one of the striking characteristics of such stable sociolinguistic variables is that while there is general awareness that one variant is "correct", individual members of the speech community are not aware that they shift in the way they do, nor do they know that others shift in the same manner. This is certainly true in the present case. An educated native speaker of Egyptian Arabic is typically skeptical when told that literate native speakers often substitute /s,z/ for /θ,ð/ when reading Arabic, and incensed if told that he himself makes such substitutions. These substitutions are made well below the level of conscious awareness.

There is finally at least one implication for teaching English to native speakers of Egyptian Arabic. A rather common device used by teachers of English who are themselves native speakers of Arabic is to stress the identity of English th with orthographic Arabic ث (θ) and ذ (ð), rather than س (s) or ز (z). In the light of the present analysis, this seems misguided. For although there are minimal pairs showing that Arabic /θ,ð/ and /s,z/ are phonemically contrastive in careful speech, the fact remains that any printed ث may be read aloud as /s/ and any ذ as /z/. Identification of English th with the Arabic variable th is precisely what must be avoided.

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